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10/600,893	06/19/2003	Mahadev Somasundaram	CISCP340 / 6996	6796

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EXAMINER
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WONG, BLANCHE

ART UNIT	PAPER NUMBER
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2619

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10/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/600,893

Applicant(s)

SOMASUNDARAM, MAHADEV

Examiner

Blanche Wong

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-16 and 18-24 is/are pending in the application:
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 14-16 and 21-24 is/are rejected.
- 7) ☒ Claim(s) 11 and 18-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-8,10-16,18-24 have been considered but are moot in view of the new ground(s) of rejection.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method including "maintaining a plurality of routing tables ...", "receiving a packet ...", "receiving a default route ..." and "updating each of the plurality of routing tables to include the default route ..." (all in claim 1) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

### ***Claim Objections***

3. Claims 2,8,10,13-16,19,21 are objected to because of the following informalities:

With regard to claim 2, Examiner suggests replacing "the virtual private networks" in lines 1-2 with "the plurality of virtual private networks" in consistent with "a plurality of virtual private networks" in claim 1, line 4.

With regard to claim 8, Examiner suggests replacing "the virtual private networks" in line 2 with "the plurality of virtual private networks" in consistent with "a plurality of virtual private networks" in claim 7, line 4.

With regard to claim 10, Examiner suggests replacing "the routing tables" in line 14 with "the plurality of routing tables" in consistent with "a plurality of routing tables" in line 3.

With regard to claim 13, Examiner suggests replacing "the routing tables in line 2 and in line 3 with "the plurality of routing tables" in consistent with "a plurality of routing tables" in claim 12, line 3.

With regard to claim 14, Examiner suggests replacing "the sets of routing information" in line 10 with "the plurality of sets of routing information" in consistent with "a plurality of sets of routing information" in line 3.

With regard to claim 15, Examiner suggests replacing "the sets of routing information" in lines 1-2 with "the plurality of sets of routing information" in consistent with "a plurality of sets of routing information" in claim 14, line 3.

With regard to claim 16, Examiner suggests replacing "the sets of routing information" in lines 1-2 with "the plurality of sets of routing information" in consistent with "a plurality of sets of routing information" in claim 14, line 3.

With regard to claim 19, Examiner suggests replacing "the virtual private networks" in lines 2-3 with "the plurality of virtual private networks" in consistent with "a plurality of virtual private network" in claim 14, line 4.

With regard to claim 21, Examiner suggests replacing "the virtual private networks" in line 4 with "the plurality of virtual private networks" in consistent with "a plurality of virtual private network" in claim 14, line 4.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claims 1-5,14,15,21-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Basso et al. (US 2004/0174879) in view of RFC 2663 (IP NAT).

With regard to claims 1,14,22-24, Basso discloses NAT translation comprising:  
maintaining a plurality of routing tables (**a plurality of routing tables, para. [0028]; see also 204 in Fig. 2**), each of the plurality of routing tables being associated with a different one of a plurality of virtual private networks (**a routing table is associated with a VPN, para. [0028]**);

receiving a packet (**data packet 210 in Fig. 2, para. [0025]**), the packet including an IP source address (**the network layer address, para. [0025], must be part of an IP source address in an MPLS system, para. [0022]**) and an IP destination address (**IP destination address of the packet, para. [0025]**), the packet further including information (**Table ID 606 [of an entry of a VRF table] identifies the routing table, para. [0029], see also Fig. 6A**) indicating one of the plurality of routing tables to route the packet;

performing NAT on the packet (**two lookups, para. [0025]**);

identifying one of the plurality of routing tables to route the packet (**Table ID 606 identifies the routing table 504, para. [0029], see also Fig. 6A**);

identifying an entry (**outer label 612 in routing table 504, para. [0030]**) in the one of the plurality of routing tables using the IP destination address (**the IP destination address is used to matched with an entry in a VRF table, para. [0025]** and in turn, the Table ID of the entry is used to identify an entry/outer label in a routing table); and

routing the packet (**tunnel the data packet**) using the identified routing table entry (**outer label**) (**outer label is used to tunnel the data packet across the LSP, para. [0030]**).

However, Basso fails to explicitly show receiving a default route advertised by a network device providing one or more shared services, wherein each of the shared services is available to each of the plurality of virtual private networks; and updating each of the plurality of routing tables to include the default route to the network device providing one or more shared services available to each of the plurality of virtual private networks.

RFC 2663 discloses NAT translation comprising receiving a default route (**it is inherent that there is at least one established route**) advertised (**advertised**) by a network device (**network from the external realm**) providing one or more shared services (**network from the external realm may be advertised within the private network, Section 4.1. Traditional NAT**) (**See also Section 2.7. External network**) and updating each of the plurality of routing tables to include the default route (**updating routing table is inherent in NAT**).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine receiving a default route advertised by a network device and updating each of the plurality of routing tables to include the default route as taught in RFC 2663 with Basso, to provide for transparent routing. RFC 2663, Section 2.2.

With regard to claim 2, Basso further discloses the method as recited in claim 1. Basso further discloses a different customer (**Site 1 can be an organization's private network, Site 2 can be a remote office in London, para. [0006]**).

With regard to claim 3, Basso further discloses the method as recited in claim 1. Basso further discloses an ingress interface of a service provider network (**ingress LER, para. [0025]**).

With regard to claim 4, Basso further discloses the method as recited in claim 1. Basso further discloses an egress interface of a service provider network (**egress LER, para. [0025]**).

With regard to claim 5, Basso further discloses the method as recited in claim 1. Basso further discloses network devices (**ingress point border device 104, egress point border device 106, LERs, para. [0007]**) associated with a service provider network (**network 100 in Fig. 1, para. [0007]**).

With regard to claim 6, Basso discloses NAT translation comprising:

maintaining a plurality of routing tables (**a plurality of routing tables, para. [0028]; see also 204 in Fig. 2**), each of the plurality of routing tables being associated with a different one of a plurality of virtual private networks (**a routing table is associated with a VPN, para. [0028]**);

receiving a packet (**data packet 210 in Fig. 2, para. [0025]**), the packet including an IP source address (**the network layer address, para. [0025], must be part of an IP source address in an MPLS system, para. [0022]**) and an IP destination address (**IP destination address of the packet, para. [0025]**), the packet further including information (**Table ID 606 [of an entry of a VRF table] identifies the routing table, para. [0029], see also Fig. 6A**) indicating one of the plurality of routing tables to route the packet;

performing NAT on the packet (**two lookups, para. [0025]**);

identifying one of the plurality of routing tables to route the packet (**Table ID 606 identifies the routing table 504, para. [0029], see also Fig. 6A**);

identifying an entry (**outer label 612 in routing table 504, para. [0030]**) in the one of the plurality of routing tables using the IP destination address (**the IP destination address is used to matched with an entry in a VRF table, para. [0025] and in turn, the Table ID of the entry is used to identify an entry/outer label in a routing table**); and



routing the packet (**tunnel the data packet**) using the identified routing table entry (**outer label**) (**outer label is used to tunnel the data packet across the LSP, para. [0030]**).

However, Basso fails to explicitly show translating the IP source address from a private address to a public address when the packet is received from a network device in a private network.

RFC 2663 discloses translating the IP source address from a private address (**private network**) to a public address (**external network**) when the packet is received from a network device in a private network (**hosts in a private network**) (“**[IP] Address translation allows hosts in a private network to transparently communicate with destinations on an external network and vice versa**”, 1. Introduction).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine translating the IP source address from a private address to a public address when the packet is received from a network device in a private network as taught in RFC 2663 with Basso, to provide for transparent routing. RFC 2663, Section 2.2.

With regard to claim 7, Basso discloses NAT translation comprising:  
maintaining a plurality of routing tables (**a plurality of routing tables, para. [0028]; see also 204 in Fig. 2**), each of the plurality of routing tables being associated

with a different one of a plurality of virtual private networks (**a routing table is associated with a VPN, para. [0028]**);

receiving a packet (**data packet 210 in Fig. 2, para. [0025]**), the packet including an IP source address (**the network layer address, para. [0025], must be part of an IP source address in an MPLS system, para. [0022]**) and an IP destination address (**IP destination address of the packet, para. [0025]**), the packet further including information (**Table ID 606 [of an entry of a VRF table] identifies the routing table, para. [0029], see also Fig. 6A)** indicating one of the plurality of routing tables to route the packet;

performing NAT on the packet (**two lookups, para. [0025]**);

identifying one of the plurality of routing tables to route the packet (**Table ID 606 identifies the routing table 504, para. [0029], see also Fig. 6A)**;

identifying an entry (**outer label 612 in routing table 504, para. [0030]**) in the one of the plurality of routing tables using the IP destination address (**the IP destination address is used to matched with an entry in a VRF table, para. [0025] and in turn, the Table ID of the entry is used to identify an entry/outer label in a routing table**); and

routing the packet (**tunnel the data packet**) using the identified routing table entry (**outer label**) (**outer label is used to tunnel the data packet across the LSP, para. [0030]**).

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However, Basso fails to explicitly show translating the IP source address from a public address to a private address when the packet is received from a network device in a public network.

RFC 2663 discloses translating the IP source address from a public address **(external network)** to a private address **(private network)** when the packet is received from a network device in a public network **(vice versa)** (“**[IP] Address translation allows hosts in a private network to transparently communicate with destinations on an external network and vice versa**”, 1. Introduction).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine translating the IP source address from a public address to a private address when the packet is received from a network device in a public network as taught in RFC 2663 with Basso, to provide for transparent routing. RFC 2663, Section 2.2.

With regard to claim 15, Basso further discloses each of the sets of routing information corresponding to each virtual private network is stored in a separate routing table **(a plurality of routing tables, para. [0028])**.

With regard to claim 21, the combination of Basso and RFC 2663 discloses the method as recited in claim 14.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine updating each of the plurality of routing tables to include the

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default route because it is inherent (**updating routing table is inherent in NAT**) with Basso and RFC 2663, to provide for transparent routing. RFC 2663, Section 2.2.

6. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Basso and RFC 2663 as applied to claim 7 above, and further in view of RFC 2547 (BGP/MPLS VPNs).

With regard to claim 8, the combination of Basso and RFC 2663 disclose the method as recited in claim 7. However, the combination fails to explicitly show the network device in the public network provides one or more services to each of the virtual private networks.

RFC 2547 discloses the network device (**service provider**) in the public network (**enterprise network**) provides one or more services (**IP backbone services**) to each of the virtual private networks (**VPNs**) ("**a Service Provider with an IP backbone may provide VPNs ... to support the outsourcing of IP backbone services for enterprise networks ...**", Abstract).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the network device in the public network provides one or more services to each of the virtual private networks as taught in RFC 2547 with Basso and RFC 2663, to provide services to VPNs.

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7. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Basso in view of Ferguson et al. (U.S. Pat No. 7,227,867).

With regard to claim 10, Basso discloses NAT translation comprising:

maintaining a plurality of routing tables (**a plurality of routing tables, para. [0028]; see also 204 in Fig. 2**), each of the plurality of routing tables being associated with a different one of a plurality of virtual private networks (**a routing table is associated with a VPN, para. [0028]**);

receiving a packet (**data packet 210 in Fig. 2, para. [0025]**), the packet including an IP source address (**the network layer address, para. [0025], must be part of an IP source address in an MPLS system, para. [0022]**) and an IP destination address (**IP destination address of the packet, para. [0025]**), the packet further including information (**Table ID 606 [of an entry of a VRF table] identifies the routing table, para. [0029], see also Fig. 6A**) indicating one of the plurality of routing tables to route the packet;

performing NAT on the packet (**two lookups, para. [0025]**);

identifying one of the plurality of routing tables to route the packet (**Table ID 606 identifies the routing table 504, para. [0029], see also Fig. 6A**);

identifying an entry (**outer label 612 in routing table 504, para. [0030]**) in the one of the plurality of routing tables using the IP destination address (**the IP destination address is used to matched with an entry in a VRF table, para. [0025]**)

and in turn, the Table ID of the entry is used to identify an entry/outer label in a routing table);

routing the packet (tunnel the data packet) using the identified routing table entry (outer label) (outer label is used to tunnel the data packet across the LSP, para. [0030]); and

identifying the one of the plurality of routing tables (Table ID 606 identifies the routing table 504, para. [0029], see also Fig. 6A) associated with the virtual private network (a routing table is associated with a VPN, para. [0028]).

However, Basso fails to explicitly show the packet includes an MPLS tag indicating a virtual private network.

Ferguson discloses an MPLS tag (tag) indicating a virtual private network (VPN) (tag 420 may represent a VPN, col. 8, line 56).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an MPLS tag indicating a VPN as taught in Ferguson with Basso to provide for next hop information associated with the particular VPN. Ferguson, col. 8, lines 58-59.

8. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Basso and RFC 2663, and further in view of Kubota et al. (US 2003/0142669).

With regard to claim 16, the combination of Basso and RFC 2663 discloses the method as recited in claim 14. However, Basso fails to explicitly show each entry in the routing table includes a VPN identifier identifying the corresponding virtual private network.

Kubota discloses each entry (**rows in a routing table**) in the routing table (**VPN routing table 81 in Fig. 8, para. [0099]**) includes VPN identifier (**VPN column in Fig. 8, para. [0099]**) identifying the corresponding virtual private network.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine each entry in the routing table includes a VPN identifier identifying the corresponding virtual private network as taught in Kubota in Basso and RFC 2663 to provide for switching and routing at an edge node. Kubota, Fig. 6.

#### ***Allowable Subject Matter***

9. **Claims 12 and 13** are allowed.
10. Claims 11,18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claim 12, the prior art of record fails to anticipate or make obvious "an entry in a translation table including the IP source address, the IP destination address, and a virtual private network identifier identifying the virtual private network."

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**Conclusion**

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 571-272-3177. The examiner can normally be reached on Monday through Friday, 830am to 530pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



BW

August 28, 2007

EDAN B. ORGAD  
SUPERVISORY PATENT EXAMINER



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